DISCUSSION OF THE AMENDMENT

Claim 1 has been amended by replacing "loaded part of the test piece" with --a specimen, as set forth in JIS-P 8126--. Claim 7 has been amended to clarify that the crack preventing layer is present on at least one surface of the molding base paper. Claims 10 and 15 have each been amended to depend on Claim 1 only. Claim 15 has been additionally amended to recite that the molding paper vessel is formed --by drawing-- the molding base paper, as supported in the specification at page 7, second full paragraph. Finally, the term "satisfying" has been replaced with the synonymous --which complies with-- in Claim 1; a similar amendment has been made to Claim 16.

New Claims 17-20 have been added, to claim embodiments deleted in the above-discussed amendments to Claims 10 and 15.

The Abstract has been amended to be one paragraph.

No new matter has been added by the above amendment. Claims 1-20 are now pending in the application.

REMARKS

The present invention is directed to molding base paper and a molding paper vessel produced from it.

As described in the specification under "Background of the Invention," beginning at page 1, line 6, packing vessels for industrial products or the like, such as for keeping foods fresh, are frequently made out of plastic, which material is disadvantageous to the environment when discarded. To solve these problems, 3-dimensional moldings made of pulp only or a material mainly comprising pulp have been used for this purpose, but processes for making these materials, and the materials themselves, have been problematical. The

present invention addresses the problems of the prior art.

The rejection of Claims 3-6 and 10-16 under 35 U.S.C. § 102(e) as anticipated by U.S. 6,379,497 (Sandstrom et al) is respectfully traversed.

As recited in Claim 3, an embodiment of the present invention is a molding base paper comprising a high density layer and a low density layer, wherein said high density layer has a density of 0.7 to 0.9 g/cm^3 and said low-density layer has a density of lower than 0.7 g/cm^3, and wherein said base paper has a basis weight of 100 to 500 g/cm^2 and a density of 0.4 to 0.7 g/cm^3. Sandstrom et al discloses a bulk enhanced paper board and shaped products made therefrom. Sandstrom et al discloses the fiber mat density of their fiber board as 3 to 9 pounds per 3,000 square foot ream at a fiber board thickness of 0.001 inch (paragraph bridging columns 5 and 6). This value corresponds to 0.193 to 0.578 g/cm^3. Therefore, the paperboard of Sandstrom et al does not contain the above-recited high-density layer whose density is 0.7 to 0.9 g/cm^3. Indeed, Sandstrom et al neither discloses nor suggests the combination of high-density and low-density layer of the present claims. As described in the specification at page 15, lines 14-18, by so combining a low-density layer and a high-density layer, the resultant base paper meets the conditions (1) to (4) of Claim 1, discussed in greater detail *infra*, and therefore, the strength, elongation, stiffness and compressibility are well-balanced so that a deep drawing process can be successfully applied to it without causing breakage.

For all the above reasons, it is respectfully requested that the rejection over Sandstrom et al be withdrawn.

The rejections of Claim 1 under 35 U.S.C. § 102(e) as anticipated by U.S. 6,221,212 (Sjöström), and of Claims 2 and 7-9 under 35 U.S.C. § 103(a) as unpatentable over Sjöström in view of U.S. 6,187,430 (Mukoyoshi et al), are respectfully traversed.

As recited in above-amended Claim 1, an embodiment of the present invention is a molding base paper which complies with the following conditions (1) to (4):

(1) a tensile strength (JIS-P 8113) of at least 2.0 kN/m,

(2) an elongation at break (JIS-P 8113) of at least 1.5 %,

(3) a critical compression stress, defined by the following formula, in the range of 1 to 10 MPa:

critical compression stress = A/B

wherein A represents the compression strength determined by JIS-P 8126, and B represents the area of a specimen, as set forth in JIS-P 8126 in the determination of the compression strength, and

(4) an amount of compression deformation, caused by applying compression stress of 20 kgf/cm^2 in the thickness direction, of at least 10 %.

Sjöström discloses a cardboard having great rigidity and low grammage, and a package made thereof, wherein the cardboard consists of a core, which is surrounded by at least one outer ply on each side, wherein the cardboard, the core and the outer plies each have various properties, as described therein. Sjöström is concerned with enhancing the rigidity or stiffness of cardboard, but discloses and suggests nothing with regard to the processibility of paperboard when it is subject to a drawing method, such as deep drawing molding. Nor does Sjöström disclose or suggest any press-molding process. Thus, Sjöström neither discloses nor suggests the above-recited conditions (1) to (3). The Examiner incorrectly finds that Sjöström discloses a tensile strength between 7.0 and 9.0 kNm/g, and a bending strength (elongation) between 29.7 and 54.3 Nm^6/kg^3. The Examiner has incorrectly equated tensile strength with tensile stiffness index, which is disclosed by Sjöström. Similarly, the Examiner has incorrectly equated bending strength (elongation) with bending resistance or resistance

index, disclosed by Sjöström. Tensile stiffness index is expressed by tensile stiffness/grammage (column 1, line 30). The tensile stiffness is the maximum slope for each test for the force elongation curve, as demonstrated by the Standard T 494 om-96, 6.13 lines 5-6, a copy of which is **submitted herewith**. Therefore, tensile stiffness is proportional to Young's modulus. Indeed, this is also clear from Sandstrom et al, *supra*. See column 5, lines 25-42 thereof. However, tensile strength and elongation at break, as recited in Claim 1, have nothing to do with tensile stiffness, tensile stiffness index, or Young's modulus. In addition, the former properties cannot be calculated or assumed from the latter properties. Furthermore, bending resistance or resistance index is also used for determining rigidity as shown in Sjöström in that rigidity is expressed by bending resistance or bending resistance index (column 1, line 22-24). This factor also has no relationship to tensile strength or elongation at break.

Mukoyoshi et al does not remedy the above-discussed deficiencies of Sjöström. Mukoyoshi et al is drawn to an inkjet recording sheet, but does not disclose or suggest the presently-claimed subject matter, even in combination with Sjöström.

For all the above reasons, it is respectfully requested that the above rejections be withdrawn.

The rejection of Claims 1, 7, 15 and 16 under 35 U.S.C. § 112, second paragraph, is respectfully traversed. **Submitted herewith** are English translations of JIS-P 8126 and JIS-P 8113. As JIS-P 8126 makes clear, "B", as recited in Claim 1, is based on the area of the specimen described therein, and shown particularly at Fig. 1 therein. Regarding the term "satisfying," it is respectfully submitted that that term would be well-understood by persons skilled in the art. To satisfy a condition means that the condition must be complied with, and thus the term "satisfy" has been replaced with the synonymous --which complies with--. The

Examiner's suggestion to change the term "satisfying" to "comprising" would be meaningless, because it is not clear how something can "comprise" a property, which is what each of the recited conditions specify. The rejections of Claims 7 and 15 are now moot in view of the above-discussed amendment. With regard to Claim 16, it is clear that the value "0.15" represents a relationship that must be satisfied by S2, which represents the area of the opening at the top of the molded paper vessel, and H, which represents the height of the vessel. If the recited formula is not satisfied, i.e., it is <0.15, then a molded paper vessel having a corresponding H and S2 are outside the terms of the claim; on the other hand, if the formula is satisfied, then the molding paper vessel is within the terms of the claim.

In view of the above, it is respectfully requested that the rejection under 35 U.S.C. § 112, second paragraph, be withdrawn.

The objection to Claims 7, 10 and 15 as being in improper multiple dependent form is respectfully traversed. Claims 10 and 15 now depend on Claim 1 only. Claim 7 is still a multiply dependent claim, but it is not improper, since none of the claims from which it depends, i.e., Claims 1-6, are themselves multiple dependent claims.

For all the above reasons, it is respectfully requested that the objection be withdrawn.

The Abstract is now in a single paragraph. To the extent the Examiner has made an objection thereof, it is now moot.

Submitted herewith is an Information Disclosure Statement (IDS). The Examiner is respectfully requested to initial the Form PTO 1449 submitted therewith, and include a copy thereof with the next Office communication.

All of the presently pending claims in this application are now believed to be in

immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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Marked-Up Copy
Serial No: 09/867,629
Amendment Filed on: HEREWITH

IN THE CLAIMS

1. (Amended) A molding base paper [satisfying] which complies with the following conditions (1) to (4):

(1) a tensile strength (JIS-P 8113) of at least 2.0 kN/m,

(2) an elongation at break (JIS-P 8113) of at least 1.5 %,

(3) a critical compression stress, defined by the following formula, in the range of 1 to 10 MPa:

critical compression stress = A/B

wherein A represents the compression strength determined by JIS-P 8126, and B represents the area of [loaded part of the test piece] a specimen, as set forth in JIS-P 8126 in the determination of the compression strength, and

(4) an amount of compression deformation, caused by applying compression stress of 20 kgf/cm^2 in the thickness direction, of at least 10 %.

7. (Amended) The molding base paper according to claims 1 to 6, further comprising on at least one surface thereof a crack preventing layer having an elongation at break of at least 5 %[, at least one surface thereof].

10. (Amended) The molding base paper according to [claims 1 to 9] claim 1, further comprising a synthetic resin layer on at least one surface thereof.

15. (Amended) A molded paper vessel formed [from] by drawing the molding base paper according to [claims 1 to 14 by the drawing] claim 1.

16. (Amended) The molded paper vessel according to claim 15, which [satisfies] complies with the following formula:

$$0.15 \leq H/(S2)^{1/2}$$

wherein S2 represents the area of the opening at the top of the vessel and H represents the height.

Claims 17-20. (New).

IN THE ABSTRACT

A molding base paper used for forming paper vessels such as a cup or tray for foods and various industrial products is disclosed which satisfies the following conditions (1) to (4):

(1) a tensile strength (JIS-P 8113) of at least 2.0 kN/m,

(2) an elongation at break (JIS-P 8113) of at least 1.5 %,

(3) a critical compression stress, defined by the following formula, in the range of 1 to 10 MPa:

critical compression stress = A/B

wherein A represents the compression strength determined by JIS-P 8126, and B represents the area of [loaded part of the test piece] a specimen, as set forth in JIS-P 8126 in the determination of the compression strength, and

(4) an amount of compression deformation, caused by applying compression stress of 20 kgf/cm^2 in the thickness direction, of at least 10 %. [The] wherein the paper vessels are prepared by controlling the water content of the molding base paper at 10 to 20 % and then drawing the molding base paper at 100 to 150°C.